

-30-

CLAIMS

1. An implantable medical device comprising:
a housing;
a header coupled with the housing; and
an antenna disposed within the header, wherein at least a portion of the antenna has a serpentine configuration.
2. The implantable medical device of claim 1, wherein the serpentine configuration is continuous and comprises a plurality of generally linear antenna segments interconnected in an alternating end to end configuration by arcuate antenna segments.
3. The implantable medical device of claim 1, wherein the antenna is evenly spaced from a side surface of the header.
4. The implantable medical device of claim 1, wherein the antenna is spaced at a distance of approximately 10-100 mils from a side surface of the header.
5. The implantable medical device of claim 1, wherein the antenna is spaced at a distance of approximately 50 mils from a side surface of the header.
6. The implantable medical device of claim 1, wherein the header is a connector header having at least one connector port.
7. The implantable medical device of claim 6, wherein a plane defined by the serpentine configuration of the antenna is disposed between a side surface of the header and the connector port.

-31-

8. The implantable medical device of claim 6 wherein a plane defined by the serpentine configuration of the antenna is disposed between the connector port and the housing.
9. The implantable medical device of claim 1, wherein the header is a connector header that includes at least two connector ports and a plane defined by the serpentine configuration of the antenna is disposed between a pair of the connector ports.
10. The implantable medical device of claim 1, wherein a plane defined by the serpentine configuration is generally parallel with a major wall of the header.
11. The implantable medical device of claim 1, wherein the antenna is disposed within a channel within the header, the channel having a constraining length that is shorter than an antenna length of the antenna.
12. The implantable medical device of claim 11, wherein the antenna length is between 1 to 4 inches.
13. The implantable medical device of claim 11, wherein the antenna length is between 2 to 3 inches.
14. The implantable medical device of claim 1, wherein the antenna includes multiple serpentine portions.
15. A telemetry antenna for an implantable medical device comprising:
 - a proximal end section having an antenna connector;;
 - a distal end opposite the proximal end section;
 - a serpentine portion disposed between and forming a generally continuous antenna path between the proximal end section and the distal end,

-32-

the serpentine portion including a plurality of first antenna segments interconnected in an alternating end-to end configuration by a plurality of second antenna segments.

16. The telemetry antenna of claim 15, wherein the first antenna segments are generally linear in at least one dimension and the second antenna segments are arcuate.

17. The telemetry antenna of claim 16, wherein a length of the first antenna segments is greater than a length of the second antenna segments.

18. The telemetry antenna of claim 16, wherein the first antenna segments are generally parallel to one another.

19. The telemetry antenna of claim 18, wherein a pitch of the serpentine portion is between approximately .01 inches and .05 inches.

20. The telemetry antenna of claim 18, wherein a pitch of the serpentine portion is between approximately .06 inches and .25 inches.

21. The telemetry antenna of claim 15, further comprising a second serpentine portion disposed between the serpentine portion and the distal end, wherein an interconnecting segment interconnects the serpentine portion with the second serpentine portion.

22. The telemetry antenna of claim 21 wherein the interconnecting segment is generally linear in at least one dimension.

23. The telemetry antenna of claim 21, wherein the interconnecting segment is curvilinear.

-33-

24. The telemetry antenna of claim 15, further comprising a distal segment interconnecting the serpentine portion and the distal end.

25. The telemetry antenna of claim 24, wherein the distal segment is linear in at least one dimension.

26. The telemetry antenna of claim 24, wherein the distal segment is curvilinear.

27. The telemetry antenna of claim 15, wherein the serpentine portion is formed from a substrate having a cross sectional width defining a major planar profile and a cross sectional height defining a product length planar profile and a product width planar profile, wherein the serpentine portion has a serpentine configuration in the major planar profile.

28. The telemetry antenna of claim 27, wherein the cross sectional width is greater than the cross sectional height.

29. The telemetry antenna of claim 27, wherein the serpentine portion has a linear configuration in the product length planar profile.

30. The telemetry antenna of claim 27, wherein the serpentine portion has a curvilinear configuration in the product length planar profile.

31. The telemetry antenna of claim 27, wherein at least a portion of the antenna has a linear configuration in the product length planar profile.

32. The telemetry antenna of claim 27, wherein at least a portion of the antenna has a curvilinear configuration in the product length planar profile.

-34-

33. The telemetry antenna of claim 27, wherein the serpentine portion has a linear configuration in the product width planar profile.

34. The telemetry antenna of claim 27, wherein the serpentine portion has a curvilinear configuration in the product width planar profile.

35. The telemetry antenna of claim 27, wherein at least a portion of the antenna has a linear configuration in the product width planar profile.

36. The telemetry antenna of claim 27, wherein at least a portion of the antenna has a curvilinear configuration in the product width planar profile.

37. The telemetry antenna of claim 27, wherein the substrate is titanium.

38. The telemetry antenna of claim 37, wherein the cross sectional width is approximately 30 mils and the cross sectional height is approximately 20 mils.

39. The telemetry antenna of claim 37, wherein an antenna length exceeds a product length and the antenna length is between 1-10 inches.

40. The telemetry antenna of claim 37, wherein an antenna length exceeds a product length and the antenna length is between 2-3 inches.